

Supplemental Tables S2, S3, S4, S5

Biochemical Foundations of Health and Energy Conservation in Hibernating Free-Ranging Subadult Brown Bear *Ursus arctos*

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Table S2. Metabolites identified and quantified by mass spectrometry in 2010 paired blood samples of seven brown bears, ID 0824M, 0910M, 0825F, 0820F, 0819F, 0818F, 0812M, a human reference plasma sample, and comparable published data.

St-2013 (Stenvinkel et al., 2013 (18)): Median of paired plasma W and S concentrations of 16 bears, including the 7 bears of the present study.

So-2016 (Sommer et al., 2016 (21)): Mean of serum W and S concentrations of 7 to 15 brown bears.

NS, not significant, $p > 0.05$; nd, not determined.

Analyte	Winter bears mean μM	Summer bears mean μM	Human mean μM	W/S mean paired	T-test paired W/S	Bear W/S published
Carnitines:						So-2016
C0	64.06	43.39	46.83	1.53	0.030	nd
C2	19.87	4.23	6.09	5.13	0.000	3.58
C3	0.49	0.55	0.42	1.08	0.702	0.22
C3-DC (C4-OH)	0.82	0.52	0.56	1.65	0.005	4.97
C3-OH	0.32	0.23	0.26	1.44	0.028	nd
C3:1	0.10	0.07	0.09	1.32	0.036	nd
C4	0.39	0.35	0.33	1.20	0.390	0.40
C4:1	0.29	0.21	0.24	1.46	0.024	nd
C5	0.47	0.55	0.36	0.93	0.366	0.17
C5-DC (C6-OH)	0.39	0.31	0.32	1.33	0.018	0.14
C5-M-DC	0.48	0.37	0.37	1.34	0.015	nd
C5-OH (C3-DC-M)	0.42	0.33	0.29	1.29	0.004	NS
C5:1	0.17	0.13	0.15	1.29	0.051	1.27
C5:1-DC	0.45	0.34	0.36	1.33	0.012	nd
C6 (C4:1-DC)	0.33	0.21	0.24	1.60	0.002	1.95
C6:1	0.23	0.16	0.17	1.43	0.007	nd
C7-DC	0.40	0.29	0.30	1.43	0.016	0.27
C8	0.61	0.48	0.52	1.30	0.016	1.73
C9	0.24	0.18	0.18	1.38	0.026	nd
C10	0.47	0.42	0.45	1.17	0.129	NS
C10:1	0.20	0.15	0.22	1.39	0.007	NS
C10:2	0.10	0.09	0.10	1.21	0.088	NS
C12	0.30	0.22	0.27	1.42	0.006	1.56
C12-DC	0.45	0.38	0.40	1.21	0.024	1.42
C12:1	0.17	0.12	0.18	1.49	0.008	NS
C14	0.20	0.15	0.13	1.45	0.012	1.63
C14:1	0.14	0.08	0.11	1.91	0.001	8.08
C14:1-OH	0.15	0.10	0.08	1.59	0.005	NS
C14:2	0.08	0.06	0.07	1.48	0.007	3.97
C14:2-OH	0.08	0.06	0.06	1.40	0.032	nd
C16	0.49	0.18	0.20	2.93	0.000	2.71
C16-OH	0.16	0.12	0.11	1.44	0.028	NS

C16:1	0.16	0.09	0.08	1.81	0.001	3.47
C16:1-OH	0.14	0.10	0.07	1.56	0.016	NS
C16:2	0.11	0.09	0.07	1.31	0.010	12.35
C16:2-OH	0.10	0.08	0.06	1.42	0.038	nd
C18	0.29	0.13	0.11	2.41	0.001	2.66
C18:1	0.46	0.11	0.14	4.55	0.000	4.22
C18:1-OH	0.12	0.08	0.06	1.54	0.004	1.4
C18:2	0.12	0.08	0.11	1.61	0.003	1.88
Phosphatidylcholines:						
lysoPC a C14:0	1.47	2.16	2.95	0.69	0.000	
lysoPC a C16:0	84.61	38.68	123.00	2.34	0.000	
lysoPC a C16:1	3.91	2.82	2.80	1.42	0.001	
lysoPC a C17:0	4.21	4.02	1.78	1.12	0.734	
lysoPC a C18:0	71.64	44.55	35.70	1.76	0.008	
lysoPC a C18:1	45.36	30.56	22.67	1.55	0.001	
lysoPC a C18:2	27.08	15.40	48.13	1.93	0.003	
lysoPC a C20:3	5.93	2.83	2.96	2.15	0.000	
lysoPC a C20:4	14.06	9.79	8.75	1.69	0.019	
lysoPC a C24:0	0.86	0.88	0.24	1.03	0.718	
lysoPC a C26:0	1.55	1.10	0.43	1.42	0.038	
lysoPC a C26:1	0.71	0.67	0.26	1.12	0.539	
lysoPC a C28:0	1.98	1.90	0.44	1.07	0.531	
lysoPC a C28:1	1.52	1.84	0.45	0.87	0.073	
PC aa C24:0	1.02	1.05	0.14	1.12	0.756	
PC aa C26:0	3.01	2.20	0.94	1.34	0.043	
PC aa C28:1	2.19	3.49	1.77	0.64	0.004	
PC aa C30:0	4.70	6.88	3.18	0.74	0.040	
PC aa C32:0	56.33	38.82	12.50	1.55	0.010	
PC aa C32:1	57.89	37.43	16.77	1.60	0.000	
PC aa C32:2	4.96	5.70	4.28	0.93	0.355	
PC aa C32:3	0.97	1.33	0.51	0.76	0.025	
PC aa C34:1	577.86	412.79	169.67	1.45	0.002	
PC aa C34:2	516.71	347.14	340.67	1.59	0.007	
PC aa C34:3	31.71	53.94	17.43	0.67	0.036	
PC aa C34:4	2.97	9.25	1.57	0.34	0.001	
PC aa C36:0	11.92	21.84	1.22	0.58	0.006	
PC aa C36:1	357.50	369.43	39.67	1.01	0.724	
PC aa C36:2	668.93	506.71	191.67	1.40	0.040	
PC aa C36:3	283.64	266.71	118.00	1.14	0.626	
PC aa C36:4	362.07	289.00	174.67	1.32	0.057	
PC aa C36:5	29.34	81.56	19.67	0.37	0.000	
PC aa C36:6	1.36	4.62	0.74	0.30	0.000	
PC aa C38:0	6.97	7.32	2.14	0.99	0.580	
PC aa C38:1	3.25	7.62	1.53	0.44	0.001	
PC aa C38:3	249.07	183.79	35.33	1.40	0.011	
PC aa C38:4	492.50	432.43	94.27	1.20	0.234	
PC aa C38:5	208.86	266.71	45.40	0.80	0.027	
PC aa C38:6	78.25	71.15	53.20	1.13	0.424	
PC aa C40:1	0.83	1.33	0.58	0.64	0.002	
PC aa C40:2	1.56	1.99	0.94	0.80	0.010	
PC aa C40:3	5.47	7.67	1.13	0.77	0.036	
PC aa C40:4	42.76	37.96	3.71	1.17	0.292	
PC aa C40:5	131.74	86.89	7.92	1.59	0.003	
PC aa C40:6	117.61	50.83	15.70	2.41	0.001	
PC aa C42:0	0.76	0.72	0.76	1.11	0.534	
PC aa C42:1	0.54	0.73	0.46	0.77	0.027	
PC aa C42:2	0.50	0.83	0.47	0.62	0.002	
PC aa C42:4	0.74	1.51	0.49	0.49	0.000	
PC aa C42:5	1.06	2.07	0.46	0.53	0.000	

PC aa C42:6	1.33	1.98	0.47	0.71	0.013
PC ae C30:0	1.73	1.78	0.38	1.03	0.758
PC ae C30:2	0.36	0.47	0.13	0.77	0.005
PC ae C32:1	10.85	7.24	2.81	1.58	0.003
PC ae C32:2	3.99	2.91	0.62	1.41	0.001
PC ae C34:0	11.39	12.27	1.18	1.03	0.656
PC ae C34:1	83.50	59.84	7.43	1.45	0.008
PC ae C34:2	42.03	28.55	10.30	1.49	0.003
PC ae C34:3	24.56	14.11	7.87	1.86	0.005
PC ae C36:0	6.84	6.96	0.88	1.02	0.830
PC ae C36:1	59.59	80.91	12.83	0.75	0.009
PC ae C36:2	60.39	66.76	12.67	0.97	0.534
PC ae C36:3	24.01	26.09	6.49	0.95	0.389
PC ae C36:4	39.91	99.92	16.53	0.64	0.069
PC ae C36:5	31.31	60.06	10.62	0.73	0.108
PC ae C38:0	3.10	10.57	1.71	0.31	0.000
PC ae C38:1	7.84	15.23	4.32	0.54	0.001
PC ae C38:2	13.89	16.19	4.95	0.94	0.388
PC ae C38:3	22.29	21.58	12.00	1.08	0.799
PC ae C38:4	51.71	83.94	12.53	0.68	0.029
PC ae C38:5	73.42	102.96	16.47	0.74	0.020
PC ae C38:6	20.91	30.47	5.68	0.74	0.039
PC ae C40:1	3.21	7.60	1.72	0.48	0.008
PC ae C40:2	2.73	5.79	2.30	0.49	0.001
PC ae C40:3	5.36	7.16	5.81	0.77	0.026
PC ae C40:4	13.56	19.72	5.42	0.73	0.031
PC ae C40:5	16.99	22.67	7.07	0.76	0.009
PC ae C40:6	16.09	15.92	3.37	1.02	0.880
PC ae C42:0	1.46	1.58	0.58	0.96	0.347
PC ae C42:1	2.20	2.68	0.70	0.87	0.101
PC ae C42:2	1.84	2.71	0.72	0.70	0.010
PC ae C42:3	1.17	2.13	1.12	0.57	0.003
PC ae C42:4	1.11	2.34	1.52	0.49	0.001
PC ae C42:5	2.18	3.99	3.06	0.56	0.001
PC ae C44:3	0.87	0.73	0.37	1.24	0.021
PC ae C44:4	0.76	0.77	0.57	1.01	0.799
PC ae C44:5	0.49	0.78	1.62	0.65	0.003
PC ae C44:6	0.56	0.80	1.30	0.71	0.001
Sphingomyelins					
SM (OH) C14:1	19.62	22.34	4.76	0.99	0.501
SM (OH) C16:1	25.53	27.56	2.98	1.00	0.668
SM (OH) C22:1	14.43	39.34	10.50	0.38	0.000
SM (OH) C22:2	29.31	33.33	6.70	0.95	0.451
SM (OH) C24:1	1.67	4.18	0.92	0.40	0.000
SM C16:0	282.21	276.57	119.67	1.07	0.862
SM C16:1	41.17	31.09	14.97	1.41	0.037
SM C18:0	121.56	85.87	21.37	1.48	0.053
SM C18:1	38.03	23.99	10.18	1.66	0.007
SM C20:2	1.06	1.09	0.48	1.11	0.875
SM C24:0	35.35	55.86	19.77	0.64	0.001
SM C24:1	133.89	106.99	44.47	1.26	0.029
SM C26:0	0.27	0.99	0.15	0.28	0.000
SM C26:1	0.51	1.09	0.29	0.54	0.018

Amino acids						St-2013	So-2016
Ala	648.79	624.07	539.00	1.13	0.764	NS	0.76
Arg	118.73	131.88	169.67	0.99	0.472	0.71	0.74
Asn	23.95	34.43	37.03	0.75	0.073	0.59	nd
Asp	10.94	14.49	14.23	0.81	0.149	0.59	nd
Citrulline	81.51	35.62	33.50	2.60	0.000	1.48	NS
Gln	949.00	607.93	449.00	1.64	0.003	1.46	nd
Glu	98.41	51.38	194.33	2.14	0.151	1.16	nd
Gly	374.14	337.07	271.67	1.25	0.529	NS	NS
His	103.32	78.96	79.37	1.38	0.030	1.20	NS
Ile	99.46	63.78	117.33	1.87	0.010	NS	nd
Leu	152.00	123.56	176.33	1.44	0.098	NS	nd
Lys	320.29	201.64	192.67	1.98	0.020	1.81	nd
Met	24.85	39.56	24.33	0.66	0.011	0.54	0.43
Orn	76.34	23.39	74.57	3.64	0.000	1.48	1.89
Phe	75.97	78.96	72.23	1.01	0.704	NS	0.81
Pro	258.43	146.69	282.67	1.83	0.000	nd	NS
Ser	114.01	110.84	102.90	1.14	0.884	NS	0.81
Thr	144.21	195.29	143.00	0.76	0.013	0.74	nd
Trp	48.09	69.93	65.23	0.72	0.019	NS	nd
Tyr	36.03	78.56	79.73	0.51	0.008	0.70	0.35
Val	204.50	165.96	222.67	1.40	0.059	NS	NS
Biogenic amines						St-2013	
Ac-Orn	2.02	1.12	0.60	1.94	0.005		
ADMA	0.96	1.49	0.77	0.69	0.021		
alpha-AAA	3.17	6.15	1.25	0.52	0.003		
Carnosine	47.54	23.49	0.07	2.54	0.009		
Creatinine from Table S3	258.57	69.76	90.33	3.92	0.000	2.64	
				3.78			
Kynurenine	3.45	4.28	2.48	0.96	0.376		
Met-SO	0.76	3.47	1.62	0.24	0.001		
Nitro-Tyr	0.03	0.03	0.03	1.03	0.846		
Putrescine	0.64	1.68	0.13	0.45	0.013		
Sarcosine	10.01	19.56	5.96	0.57	0.030		
Serotonin	1.43	0.87	0.00	3.09	0.157		
Spermidine	0.43	0.61	0.14	0.80	0.125		
Spermine	0.81	0.45	0.35	1.77	0.112		
Taurine	107.66	117.04	34.23	0.98	0.631		
total DMA	2.35	2.68	1.28	0.90	0.158		
Sugars						St-2013	
Hexoses mM	10.02	8.93	8.20	1.25	0.488	Glc = 1.14	

Published data (Stenvinkel et al., 2013 (ref 18):

Analyte	Winter bears median	Summer bears median	W/S paired	T-test paired
Cholesterol (mM)	10.4	6.4	1.56	$p < 0.001$
range	(8.0–18.9)	(3.7–8.8)	(1.21–2.59)	
Triglycerides (mM)	4.8	2.3	2.19	$p < 0.001$
range	(2.0–7.0)	(0.9–3.3)	(1.08–3.59)	
Total protein (g/L)	72.5	57.5	1.25	$p < 0.001$
range	(47.8–80.9)	(49.6–68.3)	(0.96–1.47)	
Albumin (g/L)	36.2 (0.55 mM)	28.3 (0.44 mM)	1.24	$p < 0.001$
range	(31.3–43.8)	(22.5–31.8)	(1.13–1.69)	

Table S3. Hematologic analyses of February and June 2010 blood samples of seven brown bears, B1-B7 (ID 0824M, 0910M, 0825F, 0820F, 0819F, 0818F, and 0812M)

Published data are shown in *Italics*. Values for blood cells were based on the mean of 12 bears, including the seven bears of the present study (6). Triglycerides and cholesterol-total were based on the median of 16 bears, including the seven bears of the present study (18). Triglycerides, Cholesterol-total, -HDL, and -LDL for the seven bears have been published previously (14).

Analysis	Units	B1W	B2W	B3W	B4W	B5W	B6W	B7W	B1S	B2S	B3S	B4S	B5S	B6S	B7S	W mean	S mean	Paired W/S	Paired t-test
Red blood cells	10 ¹² /L	8.57	9.12	8.66	9.57	9.63	9.13	9.16	6.88	7.49	6.63	6.39	7.01	6.53	6.58	9.12	6.79	1.35	0.000
Hemoglobin (Hgb)	g/L	200	217	206	225	240	219	212	172	184	169	159	182	163	159	217	170	1.28	0.000
Hematocrit	%	52.4	56.1	53.3	58.9	63.5	57	56.7	45.3	48.2	43.4	42.6	47.8	44.2	43.4	56.8	45.0	1.27	0.000
Mean corp vol	fL	61.1	61.5	61.5	61.5	65.9	62.4	61.9	65.8	64.4	65.5	66.7	68.2	67.7	66	62.3	66.3	0.94	0.000
Mean corp Hgb	pg	23.3	23.8	23.8	23.5	24.9	24	23.1	25	24.6	25.5	24.9	26	25	24.2	23.8	25.0	0.95	0.000
Mean corp Hgb	g/L	382	387	386	382	378	384	374	380	382	389	373	381	369	366	382	377	1.01	0.108
Platelets	10 ⁹ /L	163	179	132	149	167	60	190	224	163	276	253	239	210	232	149	228	0.67	0.012
RDW-SD	fL	34.7	38	37.8	42.7	42.2	40.5	37.1	38.7	37.3	39.8	37.7	38.6	36.7	36.4	39.0	37.9	1.03	0.404
RDW-CV	%	18.4	20.1	19.5	22	20.5	20.7	19.1	16.7	17.1	17.4	15.8	16.1	15.2	15.5	20.0	16.3	1.24	0.001
White blood cells	10 ⁹ /L	5.95	5.2	4.41	4.35	3.85	4.26	5.22	9.65	6.33	11.93	10.19	4.84	8.26	7.09	4.75	8.33	0.61 <i>/0.61</i>	0.009 <i>/0.001</i>
Neutrophils	10 ⁹ /L	3.74		3.17	3.16	2.52	3.16	3.53	6.71	3.97	10.81	9.26	4.06	6.68	5.05	3.21	6.65	0.43 <i>/0.53</i>	0.012 <i>/0.001</i>
Lymphocytes	10 ⁹ /L	1.85		1	0.79	1.11	0.71	1.25	1.47	1.09	1.18	0.45	0.54	1.13	1.53	1.12	1.06	1.05 <i>/1.0</i>	0.701 <i>/0.6</i>
Monocytes	10 ⁹ /L	0.36	0.49	0.24	0.4	0.22	0.39	0.44	1.46	1.27	0.25	0.67	0.23	0.46	0.51	0.36	0.69	0.69 <i>/0.57</i>	0.092 <i>/0.039</i>
Eosinophils	10 ⁹ /L	0	0	0	0	0	0	0	0	0	0.03	0.02	0.01	0.03	0	0.00	0.01		
Basophils	10 ⁹ /L	0	0	0	0	0	0	0	0.01	0	0.01	0	0	0	0	0.00	0.00		
Creatinine	μM	252.1	229.8	252.2	297.6	329.5	274.0	225.5	57.6	69.2	75.9	67.7	73.0	73.1	80.1	266	71	3.78 <i>/2.64</i>	0.000 <i>/<.001</i>
Triglycerides	mM	2.71	2.97	3.39	3.71	3.28	4.20	2.85	1.00	1.23	1.55	1.78	1.39	1.68	1.46	3.30	1.44	2.31 <i>/2.19</i>	0.000 <i>/<.001</i>
Cholesterol-total	mM	10.9	9.1	10.6	12.0	11.4	11.3	12.3	10.7	5.7	7.5	6.8	6.9	7.0	10.7	11.08	7.89	1.46 <i>/1.56</i>	0.003 <i>/<.001</i>
Cholesterol-HDL	mM	5.22	3.72	4.67	5.28	4.42	4.77	5.41	5.24	3.80	5.12	5.20	4.95	5.15	5.18	4.78	4.95	0.97	0.184
Cholesterol-LDL	mM	3.44	3.93	3.71	5.36	5.00	4.59	4.04	3.45	1.15	1.75	1.28	1.77	1.21	3.49	4.30	2.02	2.64	0.007
Lipase	μkat/L	31.67	nd	50.90	nd	103.34	nd	97.27	11.32	nd	3.63	5.44	5.35	6.01	8.01	70.8	6.6	(12.1)	

Abbreviations: RDW (Red blood cell distribution width). nd, not determined.

Table S4. Functional analyses of coagulation factors antithrombin (AT=SERPINC1), protein C (PC=PROC), F2 (FII=prothrombin), F8 (FVIII), F7 (FVII), fibrinogen (Fib); and immunochemical analysis of von Willebrand factor (VWF)

Bear ID	Year of sampling	AT	AT	AT	PC	PC	PC	FII	FII	FII	FVIII	FVIII	FVIII	FVII	FVII	FVII	Fib	Fib	Fib	VWF	VWF	
		Febr IU/mL	June IU/mL	W/S paired	g/L	g/L	g/L	Febr IU/mL	June IU/mL													
824M	2010		1.03			0.46			1.591			2.34			1.054			4.59				
910M	2010	0.42	0.98	0.43	0.4	0.37	1.08	1.251	1.088	1.15	1.43	4.6*		0.541	0.614	0.88	2.76	2.74	1.01			
825F	2010		1			0.48			1.45		0.59	5.2*		0.45	0.898	0.50		3.66				
820F	2010	0.46			0.4			1.326			0.51			0.44			2.89					
819F	2010		0.93			0.54			1.251		0.59	2.46	0.24		23.2			1.81				
818F	2010		1.1			0.42			1.326			4.1*			0.824			2.84				
812M	2010	0.5	1.13	0.44	0.47	0.38	1.24	1.326	1.288	1.03	0.36	1.65	0.22	0.537	0.872	0.62	3.19	3.66	0.87			
1015M	2011	0.53	1.06	0.50	0.24	0.45	0.53	1.064	1.129	0.94	1.13	3.09	0.37	0.417	3.09	0.13	2.65	1.65	1.61	1.604	1.963	0.82
1017F	2011	0.46	1.08	0.43	0.28	0.42	0.67	1.064	0.975	1.09	1	3.3	0.30	0.447	0.785	0.57	1.97	1.2	1.64	1.373	1.923	0.71
908M	2011	0.46	0.85	0.54	0.25	0.39	0.64	1.129	0.826	1.37	1.16	2.34	0.50	0.512	0.623	0.82	2.11	1.5	1.41	1.722	1.813	0.95
904F	2011	0.42	0.92	0.46	0.26	0.28	0.93	1.064	1.201	0.89	0.81	2.34	0.35	0.525	0.721	0.73	1.79	1.94	0.92	1.391	1.718	0.81
1004M	2011	0.44	1	0.44	0.23	0.44	0.52	1.096	0.896	1.22	0.66	3.52	0.19	0.386	0.707	0.55	2.65	1.78	1.49	1.213	1.814	0.67
825F	2011	0.5	0.97	0.52	0.39	0.46	0.85	1.32	0.805	1.64	0.93	2.94	0.32	0.663	0.727	0.91	2.07	1.08	1.92	1.413		
1105F	2012	0.41	0.88	0.47	0.35	0.54	0.65	1.35	1.06	1.27	0.57	2.13	0.27	0.56	0.93	0.60	1.92	3.82	0.50	0.94	1.48	0.64
1104F	2012	0.42	0.95	0.44	0.29	0.45	0.64	1.35	1.19	1.13	0.64	2.33	0.27	0.6	1.01	0.59	1.83	1.65	1.11	0.95	1.54	0.62
1117F	2012	0.55	0.82	0.67	0.37	0.41	0.90	1.35	0.87	1.55	1.59	5.67	0.28	0.83	1.13	0.73	1.98	1.17	1.69	1.24	1.78	0.70
1010F	2012	0.49	1.06	0.46	0.42	0.61	0.69	1.16	1.23	0.94	1.14	2.3	0.50	0.74	1.1	0.67	1.98	1.27	1.56	1.32	1.42	0.93
1011F	2012	0.49	0.85	0.58	0.3	0.4	0.75	1.16	1.03	1.13	0.6	3.87	0.16	0.84	1.15	0.73	1.87	1.71	1.09	1.17	1.7	0.69
W/S paired mean				0.49			0.78			1.18			0.30		0.65			1.29			0.75	
SD				0.07			0.21			0.23			0.10		0.19			0.41			0.12	
T-test paired				8.5E-10			0.002			0.013			2.0E-06		0.022			0.24			7.4E-05	

*Diluted and repeated

Table S5. Protein and hemoglobin concentration in bear blood plasma.

UV spectra were normalized to identical values at A340 = mean of winter or summer, respectively. Corrections were mean Winter A340 = 3.03 cm⁻¹; mean Summer A340 = 2.84 cm⁻¹ for 2010 samples.

UV-VIS spectral values were recorded at 1 mm light path. The A415 values were corrected to 10 mm light path, and for mean = 0 for A 650-750 nm.

Human HbO₂ molar extinction coefficient at 415nm is 524280 M cm⁻¹ and was applied to bear tetrameric hemoglobin Hb α_2 Hb β_2 heme₄ Mr = 2×(15110+16009) + 4×616.5 = 64704, calculated from amino acid sequences Uma_R010673 and Uma_R019543 (Bear-protein-db-Febr2013.txt). (Mr for human Hb = 64500).

2010 samples Bear ID	A280 = conc g/L	Protein g/L normalized	Hb A415 normalized	Conc Hb μ M	Conc Hb g/L	Conc $\alpha = \beta$ Hb μ M
Winter:						
0824-M	58.30	59.74	2.33	4.45	0.288	8.90
0910-M	53.51	53.96	7.22	13.78	0.892	27.55
0825-F	61.02	60.88	10.76	20.53	1.328	41.05
0820-F	55.91	56.48	6.43	12.27	0.794	24.53
0819-F	64.30	59.89	11.23	21.42	1.386	42.84
0818-F	59.68	60.73	4.15	7.92	0.512	15.83
0812-M	67.06	68.11	3.89	7.41	0.479	14.82
Mean	59.97	59.97	6.57	12.54	0.811	25.08
SD	4.68	4.40	3.43	6.55	0.424	13.10
Summer:						
0824-M	59.30	59.49	5.33	10.16	0.657	20.31
0910-M	52.41	50.36	2.50	4.77	0.309	9.54
0825-F	56.47	57.32	2.79	5.32	0.344	10.65
0820-F	52.26	53.58	1.89	3.60	0.233	7.21
0819-F	53.36	51.29	3.30	6.29	0.407	12.58
0818-F	50.46	51.81	2.15	4.09	0.265	8.19
0812-M	59.28	59.70	1.95	3.73	0.241	7.45
Mean	54.79	54.79	2.84	5.42	0.351	10.85
SD	3.56	3.97	1.20	2.29	0.148	4.59
Experimental mixtures:						
W-mix	58.92	58.92	6.50	12.40	0.802	24.80
S-mix	52.86	52.86	2.90	5.53	0.358	11.06

2010 samples Bear ID	Protein W/S	Protein increase in W %
0824-M	1.004	0.4
0910-M	1.071	7.1
0825-F	1.062	6.2
0820-F	1.054	5.4
0819-F	1.168	16.8
0818-F	1.172	17.2
0812-M	1.141	14.1
Mean	1.096	9.6
SD	0.064	6.4

Table continued

2013 samples Bear ID	Protein g/L		Protein	Protein increase in W	Hb A415	Hb conc		Hb conc		
	normalized			%	normalized	μM		g/L		
	W	S	W/S	W/S	W	S	W	S	W	S
1105-F	59.97	46.68	1.285	28.5	1.30	4.57	2.48	8.72	0.160	0.564
1104-F	57.66	48.41	1.191	19.1	2.63	1.34	5.02	2.56	0.325	0.166
1204-M	56.67	43.80	1.294	29.4	2.54	3.16	4.84	6.03	0.313	0.390
1209-F	56.98	46.42	1.227	22.7	2.63	1.98	5.02	3.78	0.325	0.245
1202-F	60.69	48.67	1.247	24.7	2.31	4.35	4.41	8.30	0.285	0.537
1207-M	55.88	45.17	1.237	23.7	2.69	4.37	5.13	8.34	0.332	0.540
1110-F	59.81	49.69	1.204	20.4	2.61	5.82	4.98	11.10	0.322	0.718
Mean	58.24	46.98	1.241	24.1	2.39	3.66	4.55	6.97	0.295	0.451
SD	1.89	2.08	0.038	3.5	0.50	1.58	0.94	3.01	0.061	0.195